



SMUD Solar Program 2001: Mid Year Update

Sacramento Municipal Utility District (SMUD)

Renewable
Generation Assets

Aug/Sep 2001

SMUD PV Program Leads the Way

The SMUD Solar Program has made significant advances over the past year in implementing ever more business oriented and sustainable solar business plans. Innovative changes to SMUD's Solar Programs along with increased investment is meeting the challenge of surging customer demand for solar roofs. In response the Sacramento solar community grows to an even more robust market as it ushers in the Solar Century.

Residential PV Pioneers:

Originally designed to deliver some 100 to 200 **Customer Owned PV Pioneer** (PVPII) sales this year, a revamped PVPII program is working through a list of over 1500 signed letters of intent from customers wishing to buy SMUD PVPII systems. This nearly overwhelming customer demand has prompted SMUD to more than triple the PVPII sales & processing team and to bring on additional installation contractors. We have also reengineered the sales transaction process. Customer contacts have been vertically integrated significantly reducing handoffs to streamline the sales, design, permitting, and financing/payment proc-

esses. These changes are enabling SMUD to respond to the tremendous increase in retrofit residential customer demand.

SMUD PV Program Progress:

As of the end of August, 2001, the PVPII program has sold over 900 kW of residential and small commercial PVPII systems compared to 132 kW in all of 2000. SMUD Solar is on track to complete nearly 2 MW under all PV programs in 2001-- up from 1.6 MW in 2000.

SMUD has over 9 MW of PV systems distributed over some 825 systems as of mid-2001.



SMUD Residential PV Pioneer System

UPEx 2001
Sacramento
Sept 30 - Oct 4, 2001
www.SolarElectricPower.org

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Sacramento new home buyers can for the first time choose a commercially built home that comes with a mini-solar power plant as a standard feature...

SMUD Press Release, July 16, 2001

SMUD TEAMS WITH LOCAL HOME BUILDERS AND THE SUN PV Energy Roofs standard feature on new homes

SMUD has joined with local home builders to incorporate PV energy roofs in new home subdivisions. Under SMUD's Solar Advantage Home program, production home builders are able to offer new home buyers a commercially built home that comes with a PV energy roof as a standard feature. To date, nine production home builders have committed to build 130 PV homes with 290 kW of solar energy. It is estimated that approximately 150 kW of PV energy roofs will be completed in 2001.

Morrison Homes kicked off the SMUD Solar Advantage Home program with a July 13th media event at their Bel Lago community. The event received wide-spread coverage on local news, and set the stage for a successful grand opening. According to Morrison Homes, four of five homes sold during the July 14th grand opening were SMUD Solar Ad-

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Morrison/SMUD Solar Advantage Model Home



Solar in New Subdivisions

(Continued from page 1)

vantage Homes. Morrison also reported that the SMUD Solar Advantage Homes help increased subdivision traffic 40%. In addition to Bel Lago, Morrison Homes will be featuring solar electric roofs in both their *Landing at Stonelake* and *Mariposa at Tributary Pointe* communities located in Elk Grove.

Beazer Homes, Sacramento's largest homebuilder, has been actively preparing for the sale of their Beazer "Powerhouse," which combines a super efficient home with a 3.3 kW solar electric system as standard equipment. Over 95% of the respondents to a Beazer Homes web survey expressed interest in purchasing a solar electric equipped home. A promotional video has been made for Beazer Homes to introduce homebuyers to the Beazer Powerhouse

and the SMUD Solar Advantage Home program. The solar group will also be working with the Building America program to further improve future Beazer projects under the NREL Zero Energy Home program.

Morrison and Beazer Homes joins Prodigy Homes, the first production home builder to offer PV energy roofs in the SMUD service territory. In addition, Forecast Homes, US Home Corporation, Tim Lewis Construction, Reyen & Bardis, R. W. Hertel & Sons, and Meritage Homes are joining the SMUD Solar Advantage Home program.

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Visit on the web:
http://www.smud.org/solaradv_home



Prodigy/SMUD Solar Advantage Home under construction

CEC Awards SMUD Solar Major R&D Grant

The California Energy Commission will fund a large, three year renewable generation RD&D program to be directed by SMUD. The program will receive CEC funding of \$13.6 million for a total budget of \$23.4 million including match share from subcontractors. A full slate of nineteen R&D projects has been developed and approved by the CEC. Most of the projects develop solar technology, with a focus on projects designed to develop PV systems with lower

installed cost and improved aesthetics. Other R&D projects will develop new technologies in the areas of wind generation, biomass generation and concentrating solar power. Most of the projects in the program are designed to deliver practical results in two to three years, although there are also a few long-term, high-risk projects with potential for very large payoffs.

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SMUD's research projects will increase the diversity of renewable generation, reducing the cost of electricity for the ratepayers of California.

Joseph McCabe,
California Energy
Commission

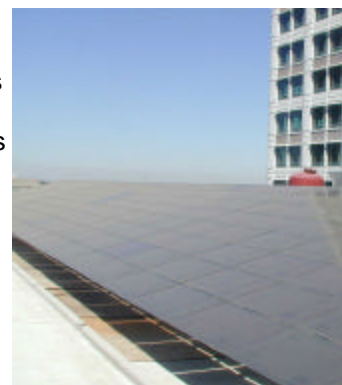
Commercial BIPV Advance (cont.)

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The CalEPA Headquarters Building, completed mid-2000, has an operational 30 kW building attached PV (BAPV) system that feeds directly into the building's electrical panel on the 8th story low rise portion of the building. Several other BIPV and the more traditional BAPV applications are being incorporated in various new projects currently under development. The California State Franchise Tax Board is planning a BIPV and BAPV system of over 1MW on their new facility. Utilizing PV modules provided by SMUD, a PowerLight system will be installed; adhering the modules to a traditional foam roof-insulating panel that will allow positive roof drainage and a seamless installation. Other major commercial projects - including the CalPERS Head-

quarters Expansion, Natomas High School and the Greening of the Capital project - will be using PV products and building integrated attachment systems. Endless creative solutions are available to builders to utilize PV's as a renewable source of reliable power as well as a creative design tool to enhance the beauty of their buildings.

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CalEPA 30kW BAPV System



SMUD Resource Plan: Clean Power For Sacramento's Future

SMUD General Manager Jan Schori has released her proposed 10-year plan for powering Sacramento with clean, reliable and affordable power.

The General Manager's Recommended Resource Plan 2001 enhances SMUD's nationally recognized leadership in energy efficiency and renewable power sources.

SMUD also will work to avoid rate increases over the next ten years and the municipal utility's rates will remain well below what most other Californians are paying. "Our goal is to continue our competitive rates for customers while building more renewable resources and contributing to cleaner air" Schori said.

The proposed plan calls for:

- A goal of 10% of non-hydro renewable resources by 2006 and 20% by 2011.
- Maintaining competitive rates that are now 30 percent less than PG&E's.
- Expanding SMUD's renowned renewable energy programs, adding new wind power to meet the needs of 12,000 homes, and new solar power to serve over 8,000 homes. This adds 45 megawatts of wind

energy and at least 30 to 40 megawatts of solar energy to SMUD's existing 10 megawatts of solar.

- Saving enough electricity through energy efficiency to power more than 40,000 homes.
- Building a new 500-megawatt gas-powered plant adjacent to the closed Rancho Seco plant.

The plan diversifies SMUD's fuel mix, reducing the financial risks of relying on one fuel or generating source. "As we've seen in the past 18 months, no one can predict uncertainties such as prolonged dry water years and major shifts in market conditions," Schori said. "However, we believe this is a progressive yet prudent plan for meeting Sacramento's long-term energy needs with one of the cleanest, most reliable and affordable energy mixes in the state."

The SMUD Board of Directors is expected to vote on the Recommended Resource Plan at its regular October 4th meeting.



Solar and wind power resources play key roles in the proposed SMUD Resource Plan

The General Manager's Recommended Resource Plan 2001 enhances SMUD's nationally recognized leadership in energy efficiency and renewable power sources.

Download from the web SMUD Solar Reports

Now it is easy to get more detailed information on the SMUD Solar Program. By using Adobe Reader, key reports, conference papers, and articles can be downloaded from the web.

Go to: www.smud.org/pv/info.html

Look for "SMUD PUBLIC INFORMATION ARTICLES".

These reports include:

- *2001 mid-year update*: An update on SMUD Solar progress September 2001
- *2000 accomplishments*: Summarizes SMUD Solar 2000 accomplishments
- *SMUD wins Energy Globe Award*: Announcement of 2001 Energy Globe
- *Developing and Commercializing PVs*: 2001

Overview of SMUD Solar Program presented at World Sustainable Energy Conference

- *Putting the Sun to Work in Sacramento*: Article on SMUD Solar Program from May/June 2000 Solar Today Magazine
- *UPEx'99: Advances in Bringing PV To The Marketplace at SMUD*: 1999 paper on SMUD Solar Program
- *SMUD: a utility helping create the solar century*: Article from Sept/Oct 2000 Renewable Energy World Magazine
- *PV as a core element of utility business plans*: Companion article from Nov/Dec 2000 Renewable Energy World Magazine



One of 30 some churches putting the sun to work for the benefit of the Sacramento community through the SMUD Solar Program



Renewable Generation Assets

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The SMUD Solar Program

We're on the web!
www.smud.org/pv



New CalSolar PV Factory in Sacramento

SMUD Takes 1st Place in International Energy Globe Award

At a ceremony in Linz, Austria, the SMUD Solar Program was awarded the international Energy Globe Award. Over 1,200 utilities, companies, agencies, and organizations from 84 countries competed for the Energy Globe Awards in various categories. SMUD won first place in the "company" category capturing a Globe trophy and a 10,000-euro cash prize. The International Energy Globe Awards, also known as the "Energy Oscars", have become the most prestigious international honor for sustainable energy programs and projects. The Energy Globe Awards recognize the most important and significant sustainable energy developments from around the world, role models for communities from all lands to follow and adapt in addressing their own energy and development needs.



Don Osborn, Superintendent Renewable Generation, accepts Energy Globe Award on behalf of SMUD

CalSolar PV Factory begins module production and makes 1st delivery

The brand new Sacramento CalSolar PV Factory has begun production. The first delivery of PV modules from the newly christened CalSolar facility to SMUD occurred on July 29, 2001. There are currently about a dozen people working at CalSolar. An additional 50 jobs will soon be added as three shift operation and additional production lines are incorporated over the next several months.

CalSolar is operated by TerraSolar, a company affiliated with Energy Photovoltaics, Inc., the supplier of the CalSolar PV processing equipment. EPV has been supplying PV modules to SMUD under a 5½ year, 10 MW contract now in its 4th year. That contract continues with production from the newest EPV affiliate, CalSolar.

Large Commercial Building Integrated PV Makes Sacramento Debut

A new campus of California State office buildings, dubbed the East End Complex, is under construction in Sacramento. Like many large commercial buildings, glass 'curtain walls' were planned as an integral part of the exterior. SMUD worked with the building design team to have a portion of the curtain wall generate solar electricity for the building. The solar active curtain wall pictured at right became the first example of BIPV (building integrated PV) systems being designed into new Sacramento buildings under the **SMUD BIPV program**.

As part of the East End Complex the State and SMUD are also providing Solarports on the top levels of the new parking structures. The first of the East End

Solarports was completed in 2000. This system provides the dual function of providing shaded parking as well as pumping 21 kW into the lights, elevators and other power circuits in the structure. Another East End Solarport (41 kW) is scheduled to be installed Fall 2002. The remaining five office buildings will utilize an additional 125 kW of building integrated PV incorporated into curtain walls and screen walls on the mechanical penthouses. The penthouses are designed to pick up all sun orientations and supplement electrical service to the building during all seasons of the year and sunlight hours.



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East End BIPV Curtain Wall Installation